1997 Annual Report

Pesticide Incident Reporting and Tracking Review Panel

July 1998

Environmental Health Programs

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Pesticide Incident Reporting and Tracking Review Panel

A report to the legislature as required by
Chapter 380, Laws of 1989, and RCW 70.104
prepared by Environmental Health Programs

July 1998

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EXECUTIVE SUMMARY

The 1997 report is the Pesticide Incident Reporting and Tracking (PIRT) Review Panel's eighth annual report. The PIRT Review Panel consists of the Washington State Departments of Agriculture (WSDA), Ecology, Health (DOH), Labor and Industries (L&I), Natural Resources (DNR), Fish and Wildlife (WDFW), as well as the University of Washington (UW), Washington State University (WSU),Washington Poison Center (WPC), a practicing toxicologist, and a member of the public.
The PIRT Panel is directed by statute (RCW 70:104.090) and has among its responsibilities the identification of inadequacies in pesticide regulations that result in insufficient protection of public health and the approval of an annual report summarizing pesticide incidents. This PIRT report presents and evaluates pesticide incidents reported in 1996.

1996 DATA SUMMARY

In 1997, the PIRT Panel reviewed agency response times to pesticide-related complaints reported in 1996. Each agency has a different statutory mandate for response time. The PIRT Panel found agency response time to be satisfactory.

In 1996, WSDA received 251 pesticide complaints resulting in the finding of 104 violations. Eighty-five percent of all WSDA complaints were determined to have minor human health consequences. Although drift complaints in 1996 rose slightly over the previous year, these numbers are considerably less than pre-1995.

DOH investigated 402 incidents involving 504 persons including 69 children under the age of 19 years. Over one-half (237) of these cases were determined to be definitely, probably or possibly related to pesticides. Seven of the pesticide related cases were determined to have severe human health outcomes. Three of these were the result of intentional ingestion. Forty-eight percent of health complaints received by DOH were associated with non-agricultural pesticide use.

The Department of Labor and Industries received 222 pesticide-related claims. Fifty-two percent of the pesticide related claims involved workers in the fruit industry. The percent of pesticide claims rejected has risen from six percent in 1993 to fifty percent in 1996. The Department is currently evaluating the reasons for the increase. The Washington Industrial Safety and Health Act Services Division conducted 39 pesticide-related investigations with 30 findings of violation.

The Washington Poison Center received 3,092 pesticide related calls in 1996. This is two percent of the total calls received. One death was reported, an intentional ingestion of a pesticide in combination with other substances. Overall the number of pesticide related calls to WPC continues to decrease with the exception of calls that involved the use of fungicides. This perhaps indicates a need for additional research and educational efforts regarding fungicides.

CONCLUSIONS

Upon reviewing the data the following observations were made:

- The number of complaints and severity of incidents have continued to decrease over the last several years. While the precise cause(s) remain unclear, PIRT suspects a combination of factors are involved, including: better trained licensed applicators; more appropriate labeling directions; increased public health outreach and educational efforts; reduced use of highly toxic pesticides; increased use of personal protective equipment and broader awareness of integrated pest management.

- The PIRT Panel finds that drift complaints could be further reduced by applicators checking for people and animals before application, and by following label directions.

- Reports of inadequate structural inspections for wood destroying organisms and complaints concerning lawn care businesses are areas of increasing concern to WSDA. Industry efforts should continue to concentrate on improving personnel training.

- Residential complaints are often caused by property owners who become careless or over zealous in application technique. For example, application for flea control is the source of many incidents. Pet owners need to be educated about the benefits of a blend of good sanitation, animal grooming, and targeted pest control products.

- The largest portion (66%) of agricultural occupational related DOH cases occurred in the tree fruit industry. This is related to the size of the industry, volume of pesticide use and the labor intensity of the crop. The industry and regulating agencies need to continue to work at decreasing the number of incidents.

- Claims data shows that each year a number of incidents occur when non agricultural workers are exposed at their workplaces. These incidents occur when the workplace has been treated or at workplaces where pesticides are sold. These incidents could be reduced by applying pesticides when employees are absent, by more thoroughly ventilating treated areas before workers return, and by continued training of retail workers about safe handling and storage practices.

As intended, PIRT data are used by the panel and the agencies to guide policy development, program activities, and prevention strategies. Based on information reviewed, the panel has directed external recommendations to the participating agencies and to PIRT itself for consideration in its 1998 meeting agendas.

Introduction

RCW 70.104.090 (Appendix A) directs the PIRT Panel to centralize the receipt of information regarding pesticide complaint investigations. As mandated, this report describes PIRT activities for 1997 and evaluates 1996 pesticide incident data. The report has been reviewed and approved by PIRT.

Table 1. PIRT Panel Representatives

Department of Health:	Maryanne Guichard, Chairman
Department of Health:	Jane C. Lee, MPH, Coordinator
Department of Agriculture:	Ann Wick
Department of Ecology:	David Rountry
Department of Fish and Wildlife:	Carl Samuelson
Department of Health:	Lynden Baum, MS
Department of Labor and Industries:	Ginny Hamilton
Department of Natural Resources:	Vacant
General Public:	Nick Heyer, Ph.D.
Practicing Toxicologist:	Gary Pascoe, Ph.D., DABT
University of Washington:	Lucio G. Costa, Ph.D.
Washington Poison Center:	William O. Robertson, MD
Washington State University:	A. Alan Schreiber, Ph.D.

1997 PIRT Activities

PIRT met four times in 1997. PIRT addressed its role, future direction, and the need for an independent evaluation of its performance. PIRT will continue to refine the scope of the evaluation during 1998.

Implementation of 1996 Annual Report Recommendations

Review randomly selected cases and joint investigations.
At the September 1997 meeting, PIRT decided to continue random case reviews. PIRT encourages continued use of its technical expertise to review complicated or unusual cases.

Review DOH intentional pesticide poisonings to determine the pesticides involved.
In 1997, DOH reviewed reported intentional ingestion cases. The findings were inconclusive as to any particular pesticide product. Many of the cases involved rodenticides in combination with other non-pesticide substances. Because most intentional ingestions do not come to the attention of DOH and are generally not preventable, DOH revised its policy and will no longer investigate cases of intentional pesticide poisoning.

Review DOH incidents that have occurred in greenhouse/nursery environments.
This recommendation will be addressed in 1998 when 1997 cases can be included in a 5-year data set.

Review WSDA's proposed database fields for elements necessary to track pesticide complaints for PIRT.
WSDA will continue work on this in 1998.

Reports from WSDA, DOH, and L&I on investigator training sessions pertaining to data entry and consistency of determinations.
In 1996, Engrossed Substitute House Bill 2703 directed WSDA and L&I to develop a Memorandum of Understanding (MOU) that would identify the role of each of the two agencies in conducting investigations of activities governed by the federal Worker Protection Standards (WPS). DOH works collaboratively with WSDA and L&I and investigates incidents involving human health; therefore, DOH was asked to participate in the development of the MOU. An interagency training session was held in early 1997 to train investigators on the MOU.

Compare Comprehensive Hospital Abstract Reporting System (CHARS) data to DOH pesticide data.
In 1997, DOH reviewed hospitalized cases related to pesticide exposure reported to both the Comprehensive Hospital Abstract Reporting System (CHARS) and the Pesticide and Surveillance Section. Reasons for differences in case ascertainment will be explored in 1998.

L&I will determine why the percent of rejected claims increased between 1993 and 1995.
During 1996, L&I conducted a preliminary review and was unable to identify reasons for the increase in rejected claims from pesticide exposure. With two additional years of data available, L&I will continue to pursue analysis of this issue.

1996 Data Summaries

Table 2 summarizes 1996 pesticide exposures for each agency submitting data. Individual descriptions of pesticide incidents are found in Appendix B.

Total Number of Pesticide Complaints/Incidents

Each agency and WPC received general inquires and concerns from the public regarding pesticides. Unless these inquiries required investigation, they are not included in the *1997 PIRT Annual Report.* All pesticide related complaints are recorded and investigated by agencies in accordance with their statutory requirements (Appendix A).

In 1996, WSDA conducted 251 investigations, DOH 402, L&I Washington Industrial Safety and Health Act (WISHA) 39, and L&I Claims Administration Program received 222 pesticide related worker compensation claims. Additionally, 3,092 pesticide related calls were received by WPC; 195 merited referral to DOH. Because of specific statutory responsibilities, incidents may be investigated by more than one agency.

Response Times

RCW 70.104.080 specifically directs PIRT to monitor agency response time to pesticide related complaints. Response time is defined as the interval between initial receipt of a complaint and an agency's first response to that complaint. The first notification is usually by telephone, followed by a personal contact. In 1996, WSDA responded to 82 percent of reported complaints within 24 hours; DOH responded to 99 percent of reported incidents within 48 hours; and, L&I responded to 77 percent of complaints within 30 days. The three agencies have different mandates for response (Appendix A).

Agency Incident Summaries

Summaries of pesticide investigations completed by individual agencies in 1996 are presented in Table 2 on the following page. These summaries characterize the number and type of complaint, geographical distribution, type of pesticides involved, agency response time, and investigation outcomes. When appropriate, comparisons are made with data from previous years.

Table 2. 1996 Agency Summaries of Pesticide Incidents

Washington State Department of Agriculture: 251 complaints.

Pesticide-Related Complaints	163
Violations	74
Complaints Unrelated to Pesticides	88
Violations	30

104 Violations by Type of Activity

▪ Agriculture	29
▪ Commercial/industrial	27
▪ PCO/WDO	20
▪ Residential (homeowner)	9
▪ Other (license/records)	18

Enforcement Actions

▪ Warning letters	160
▪ Total days of license suspension	28
▪ Individual w/fine and/or license suspension	18
▪ Civil fines	$6,565

Type of License Involved with Violations

▪ Commercial	61
▪ Unlicensed	25
▪ Private applicator	12
▪ Commercial consultant	4
▪ Public operator	2

Department of Health: 402 incidents involving 504 individual cases.

Type of Incident

▪ Agriculture	207
▪ Residential	91
▪ Commercial/industrial	63
▪ Other	41

Relationship to Exposure for 504 cases

▪ Definite	37	▪ Unrelated	66
▪ Probable	81	▪ Asymptomatic	31
▪ Possible	119	▪ Indirect	1
▪ Unlikely	106	▪ Unknown	63

69 Childhood Cases ≤ 18 yrs

▪ Definite, probable, or possible	28
▪ All other classifications	41

237 Definite, Probable, or Possible Cases

▪ Non agricultural	140
▪ Agriculture	97

L&I: Washington Industrial Safety and Health Act

Inspections	39
▪ Citations	87

Type of Business

▪ Orchard	10
▪ Golf course	6
▪ Greenhouse/nursery	5
▪ Other farms (e.g., berries, tree farms)	7
▪ Other	11

L&I: 222 worker compensation claims.

Agriculture	165
Non Agriculture	57

Benefits Paid

▪ Rejected	111
▪ Medical benefits paid	97
▪ Time loss paid	8
▪ Kept on salary	1
▪ Pending	2
▪ Unknown	3

Washington State Department of Agriculture

The Washington State Department of Agricultural (WSDA) investigated all reported complaints involving pesticide use, sales, distribution, pesticide licensing, and building structure inspections for Wood Destroying Organisms. During 1996, WSDA investigated 251 complaints (Table 3); 104 resulted in violation of state regulations. One hundred sixty-three involved pesticides and 88 were not related to pesticides.

WSDA responded to 82 percent of reported complaints within 24 hours, compared to 74 percent in 1995. WSDA is mandated to respond immediately to human health complaints and within 48 hours to all others.

Table 3. WSDA Complaints and Violations

Year	Total Complaints	Violations
1992	558	264 (47%)
1993	400	166 (42%)
1994	383	138 (36%)
1995	259	87 (34%)
1996	251	104 (41%)

Location

One hundred twenty-six (50%) of the 1996 complaints occurred in eastern Washington; 125 (50%) were from western Washington.

1996 WSDA Complaints by County

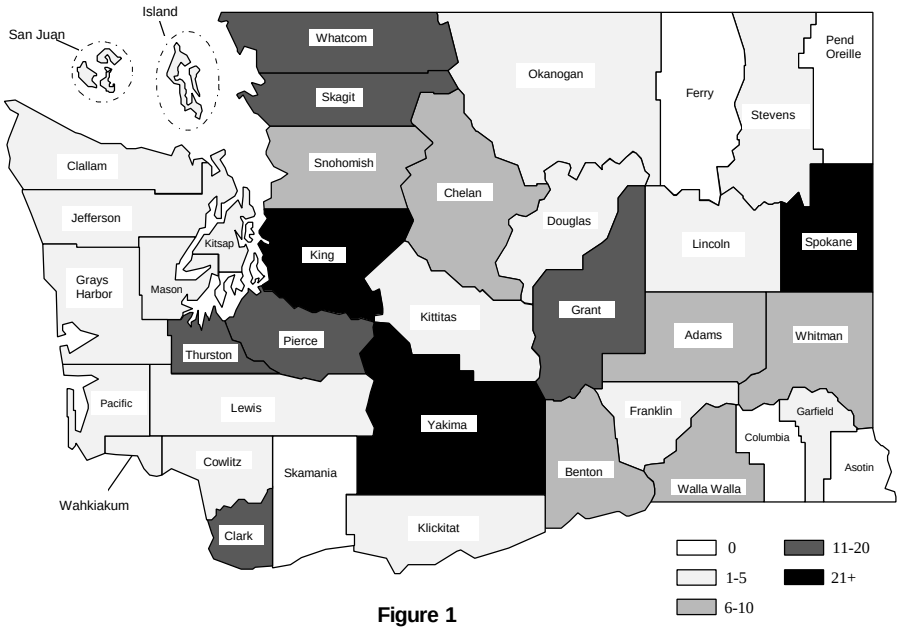

Figure 1

Type of Complaint

Table 4 shows the type of activity for complaints resulting in violations from 1992 to 1996. The following WSDA definitions apply to type of complaint.

- **Agricultural:** Incidents occur in an agricultural environment such as farming, forestry, greenhouses, or Christmas tree farming.
- **Commercial/industrial:** Incidents by licensed operators to offices, restaurants, homes, and
- landscapes.
- **Pest Control Operator (PCO):** Incidents involving a subset of commercial/industrial operators licensed to make applications to control structural pests.
- **Wood Destroying Organism (WDO):** Incidents involving inspections on structures for fungi, insects, and conditions that lead to
- pest conditions. No pesticide applications are made.
- **Residential:** Includes any application of a pesticide in a residential environment by the homeowner, resident, or neighbor.
- **Right-of-ways:** Applications made by public employees on public land such as roadways, electric lines and irrigation canal banks.
- **Other:** WSDA code for undefined use and includes licensing, storage, registration, records, and similar actions.

Table 4. 1992-1996 WSDA Violations by Type of Activity

Activity	1992	1993	1994	1995	1996
Agricultural	158	75	46	26	29
Commercial/Industrial	32	60	44	24	27
PCO/WDO*	*	*	28	28	20
Residential (non commercial)	9	15	12	3	9
Right-of Way**	**	**	**	**	3
Other (licenses, records, etc.)	65	16	8	6	16
Total Violations	**264**	**166**	**138**	**87**	**104**

** Prior to 1994, PCO cases were classified as other and, in 1996, WDO were included with PCO.*
*** Prior to 1996, right-of-ways were included with commercial/industrial.*

Nature of Pesticide Complaint

Table 5 compares the nature of initial complaints versus violations from 1992 to 1996. In 1996, complaints involving PCO/WDO or records/licenses were more likely to result in violation.

Table 5. WSDA Nature of Complaint and Complaints Resulting in Violation

	1992	1993	1994	1995	1996
Direct					
Initial Complaints	246	86	76	115	90
Violations	123	36	23	23	23
Drift					
Initial Complaints	157	197	197	64	75
Violations	58	62	58	29	31
Disposal					
Initial Complaints	21	8	9	6	6
Violations	10	6	3	1	1
Spill					
Initial Complaints	1	4	0	2	2
Violations	0	0	0	2	2
PCO/WDO*					
Initial Complaints	—	—	—	30	32
Violations	—	—	—	21	22
Records/Licenses					
Initial Complaints	92	73	78	21	19
Violations	54	41	44	10	17
Other (posting, right of way, etc.)					
Initial Complaints	41	32	23	21	28
Violations	20	21	10	1	8
Total Complaints	558	400	383	259	251
Total Violations	265	166	138	87	104

** PCO inspections began in 1995; WDO inspections began in 1996.*

Pesticide complaints are frequently the result of an application going off target. Table 7 lists the most common sites where the pesticide allegedly originated or was applied, and the source of the complaint. Drift complaints from agricultural applications are generally drift onto crops or people. Drift complaints reported from non-agricultural applications concern health or environmental risks.

Table 6. Type of License Involved with Cases Resulting in Violation

Commercial (application for fee)	61
Private applicator (application to their own property)	12
Consultant (give advice, do not apply)	4
Public operator (application to public property)	2
Unlicensed (general use, homeowner)	25

Table 7. WSDA Comparison of the Five Most Frequent Target and Complaint Sites

Agriculture				Non Agriculture			
E. WA		W. WA		E. WA		W. WA	
Target Site							
Wheat	13	Raspberries	4	Ornamentals	13	House	37
Apples	11	Forestry	3	Right-of-way	7	Ornamentals	17
Potatoes		Hay	2	Trees	7	Lawn	7
Alfalfa	3	Peas	2	Lawns	7	Trees	4
Mint	3	Potatoes	2	House	4	Blackberries	3
Complaint Site							
Human	20	Human	7	Ornamentals	17	House	35
Bees	7	Raspberries	2	Trees	9	Ornamentals	13
Alfalfa	5			Human	6	Human	8
Apples	5			Lawn	3	Lawn	6
Wheat	5			House	3	Property	4

Incidents were evaluated by target and complaint site. The following observations were made.

- In eastern Washington agriculture, pesticides applied to wheat and apples caused the highest frequency of drift complaints on people.
- Non-agricultural applications to lawns, gardens, and ornamentals resulted in the highest number of complaints when applications drifted onto similar items on
- neighboring property.
- In western Washington, agricultural complaints generally involved pesticide applications to small row crops (i.e., raspberries) that drifted off target.
- Non-agricultural complaints involved applications made in homes, and WDO inspections which adversely impacted the resident or homeowner.

How serious were these complaints?

In 1996, WSDA developed a severity rating scale for all complaints. The purpose of the rating scale was to assess the severity of each complaint and to track the reported severity of all complaints over time. With increased education and use of more targeted pesticides, the severity of reported incidents on this rating system should decrease. Another reason for looking at all complaints by severity is because of the wide variety of reported complaints. Some complaints do not involve pesticides (i.e., licensing issues), while others allege serious health effects or economic damage. Following investigation, 85 percent of all complaints were determined to have a low severity rating of two or less (Table 8). Although there may have been violations associated with these investigations, individuals generally were given Notices of Correction or Verbal Warnings rather than fines or suspended license. Actual damage or symptoms of pesticide exposure did not indicate that more corrective action from the agency was allowed by law.

The criteria used to assign ratings takes into account DOH determinations (if human exposure occurred), environmental and economic damage, and compliance with regulations.
The following table lists severity 1996 WSDA complaints and the criteria which may be used in making the determination.

Table 8. Severity Rating of All WSDA Complaint Cases

Rating	Number of Complaints	Criteria
0	64	Problem not due to pesticides and/or no cause determined; PCO/WDO inspection with no violations.
1	71	Pesticides involved, no residue, no symptoms occurred; possible pesticide problem, not substantiated; issues involving records, registration, posting, notification (multiple chemical sensitivity) or licensing; DOH classified "unlikely" or "unknown."
2	79	Residue found, no health symptoms (human, animal); health symptoms not verified; multiple minor violations; off label use; worker protection violations; PPE violations with no health symptoms; plants with temporary or superficial damage only; PCO/WDO faulty inspections; DOH classified "possible."
3	22	Minor short-term health symptoms (rash, eye irritation, shortness of breath, dizzy, nausea, vomiting); bee kills less than 25 hives; minor fish kills; economic plant damage under $1000; evidence of deliberate economic fraud; DOH classified "probable."
4	11	Short-term veterinary or hospital care; bee kills over 25 hives; significant fish kills; significant economic plant damage over $1000; environmental damage; illness involving children; DOH classified "probable."
5	4	Veterinary or hospital care, overnight or longer; physician diagnosed children's illness as caused by pesticides; animal death due to pesticides; significant environmental damage; DOH classified "definite."
6	0	Human death due to pesticides.
Total	**251**	

"Overuse of a product will not make the product work better, and is certainly more likely to cause problems."
Bob Arrington, Assistant Director, WSDA

Residential Cases

Complaints that originate from residential sites are generally of three types:

- Self/homeowner applications or a neighbor's application.
- A commercial application.
- Complaints involving faulty inspection for ants, termites, or wood rot frequently result from incorrect identification of a problem.

The relatively moist and mild climate of western Washington lends itself to the misuse of products used to control fleas and blackberries in the residential environment.

- Blackberries grow rapidly in the coastal region of the Pacific Northwest and generate many neighbor-to-neighbor disputes. Property owners try to eradicate the vines by overuse of the product causing drift, runoff, or volitization injury. Property owners also become careless or over zealous in the application technique. These types of misuse are preventable if individuals apply according to label directions.

- Fleas also present residential pesticide problems. Evidence for misuse is more anecdotal as homeowners are unlikely to report minor problems about their own applications. However, comments made by homeowners about attempts to control fleas by excessive use of products are voiced. Long-term control should be a blend of good sanitation, animal grooming, and targeted pest control products.

Commercial Residential Applications

Complaints regarding commercial residential applications are generated by drift, overspray, or alleged health effects. Commercial applicators may not always check surrounding property for potential problems.

An example of what NOT to do:

A commercial application was made to ornamental plants using lindane (an insecticide), a dormant oil, and a spray adjuvant. The applicator did not check the adjacent property on the other side of the fence for potential problems and two dogs were accidentally oversprayed. The problem escalated when the applicator did not completely inform the dog's owners about which chemical was applied. One dog was taken to a veterinarian and was released without symptoms; however, the owner now claims permanent damage was done. WSDA issued the applicator with a Notice of Correction, the maximum allowed by law for a first time, minor offense. The company is still discussing the incident with the complainant.

Type of Pesticide Involved in Complaint

The following types of pesticides were identified by residue analysis or application records: 85 herbicides, 72 insecticides, 16 fungicides, 4 rodenticides, 3 avicides, 3 growth regulators, 1 fumigants, and 7 miscellaneous. An additional 19 pesticide application complaints occurred but the actual product was unknown. Some cases involved more than one type of pesticide. For example, a complaint could result from an application that was a tank mix of insecticide and fungicide and would be listed under both categories. Forty complaints involved tank mixes.

The same general type of pesticide active ingredients were involved most frequently in violation cases during 1996 as in previous years. The active ingredients were: 2,4-D, glyphosate, azinphos-methyl, chlorpyrifos, diazinon, and dicamba.

WSDA Enforcement Action

The 104 violations that occurred in 1996 resulted in 67 Notices of Correction, and 18 individuals were issued fines/license suspensions. Seventy-four violations involved pesticides; 30 were not related to pesticide applications. Table 9 shows types of action taken by WSDA since 1989, including civil fines. The shift in enforcement activity in 1995 is related to actions taken by the legislature requiring WSDA to issue Notices of Deficiency or Correction for first time offenders of minor offenses. The Washington Regulatory Reform Act of 1995 bars civil fines or penalties for first time offenders when release of pesticide has caused no apparent harm to the environment or to human health.

Table 9. 1989-1996 WSDA Status of Enforcement Action Completed

Year	Individuals with Fines or Suspensions	Total Days of License Suspension	Civil Fines	Warning Letters/NOC
1989	21	129	$21,000	58
1990	36	78	13,275	54
1991	39	44	17,970	56
1992	29	83	11,195	147
1993	31	106	26,274	128
1994	72	219	35,000	45
1995	79	229	37,150	79
1996*	18	28	6,565	160

** Through January 1998. Revised Notice of Correction requirements, as a result of regulatory reform, affected all enforcement actions taken after July 1995. Enforcement actions taken by*

the Washington State Attorney General on violations may lag in to the next calendar year.

Table 10 lists the 1996 WSDA agency actions.

Table 10. 1996 WSDA Agency Actions

No Action Indicated	150
Technical Assistance	1
Verbal Warning	14
Advisory letter	2
Notice of Correction	67
Notice of Deficiency	3
Administrative Action	12
Referred	2
Pending	3
Total Investigations*	**251**

**150 No Action; 101 Actions (plus 3 with both administrative and NOC).*

Other Agencies Involved

WSDA consults with other state, federal, and local agencies and jurisdictions. For example, in 47 cases WSDA consulted with DOH regarding potential human exposure issues, and nine times with L&I and Washington State University (WSU).

WSDA Observations

It is encouraging to see the number of complaints decrease since 1992 in spite of increased regulations and improved reporting systems. A comparison of data year-to-year shows that various elements such as weather, product availability, pests, crops, and legal restrictions are conditions that change the frequency and type of complaints reported to WSDA.

- Many drift complaints could be eliminated by following drift prevention strategies which include checking areas for people and animals before application, and following directions completely.

- Inadequate structural inspections for WDO and lawn care businesses are an increasing area of concern, and industry efforts should concentrate on improving personnel training.

- About one-third of complaints investigated by WSDA are unrelated to pesticides. It is often difficult to determine if plant injury is due to frost or herbicide drift without chemical analysis. Insect damage generally leaves some trace of insect pest but may be difficult to see. Many complaints are neighbor-to-neighbor disputes. A few complaints involved fraud or deliberate misuse.

Department of Health

The Department of Health (DOH) investigates reports of suspected acute pesticide related illness in the state of Washington. Data are analyzed to identify problems and develop intervention.

The DOH portion of the PIRT Annual Report is organized into five sections, and each section is written to stand alone. Section One gives an overview of the number and nature of cases investigated by DOH in 1996. The remaining four sections are each designed for specific audiences: Section Two analyzes 1996 occupational cases; Section Three examines illnesses that resulted from agricultural applications; Section Four evaluates problems with urban and suburban use of pesticides; and, Section Five reviews childhood pesticide exposures.

Section One: Overall Characteristics of Reported Incidents

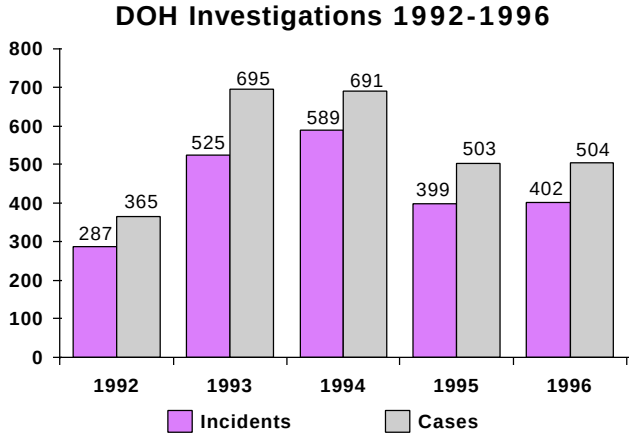

Figure 2. Annual DOH investigations of pesticide related cases since 1992. The apparent decline in cases between 1994 and 1995 was largely due to a DOH decision to no longer investigate asymptomatic childhood rodenticide ingestions.

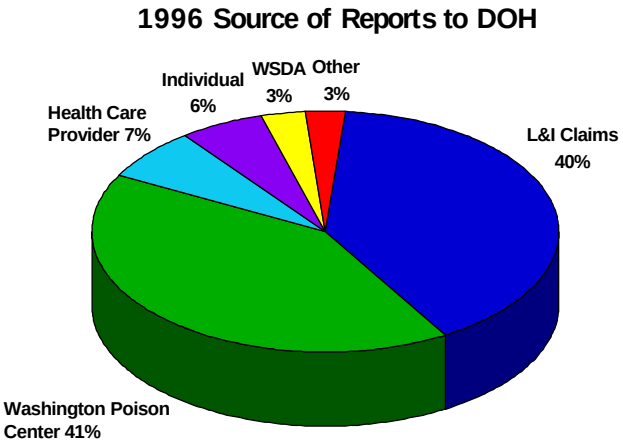

Figure 3

DOH received 402 reports of pesticide incidents involving a total of 504 individuals (cases) (Figure 2). This is comparable to the numbers reported in 1995. Reports of suspected pesticide illness were received from several sources (Figure 3). DOH responded within 48 hours to reported illnesses 99 percent of the time.

Time of Year

During 1996, 77 percent of reported pesticide exposures occurred between April and September (Figure 4). This is consistent with the exposure pattern of past years and should guide the timing of public health and employee health and safety messages.

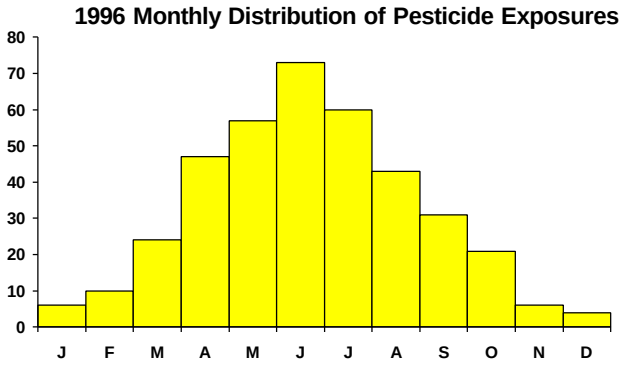

Figure 4

Classification of Investigated Cases

DOH investigators interview involved individuals and witnesses (when appropriate), obtain pesticide application and relevant medical records, and conduct field visits. The case is classified as to how likely the symptoms were related to the exposure. The classification depends on:

- how well both exposure and illness were documented at the time of the incident;
- whether descriptions of the incident by different parties involved were consistent; and,
- whether there is precedent in scientific and medical literature for the scenario described.

Each case classification is centrally reviewed. See Appendix C for definitions of the eight classifications.

DOH classified 237 (47%) cases investigated to be definitely, probably, or possibly related to pesticide exposure. This is an increase from 30 percent in 1994 and 43 percent in 1995. Figure 5 shows the distribution of case classifications for 1996.

Figure 6 shows DOH occupational and non occupational case classifications from 1992 to 1996. The peak of agricultural occupational cases in 1993 is attributable to two unique circumstances: an outbreak of workers exposed to Phosdrin and a large wholesale nursery drift incident.

Nature of Pesticide Exposure

Forty-six percent of 1996 cases considered definitely, probably, or possibly related to pesticides resulted from non-agricultural pesticide applications (Table 11). Forty-one percent were associated with agricultural pesticide applications. Fourteen percent did not involve an application (e.g., intentional ingestions, inadvertent ingestions by children, and exposures at pesticide retail and wholesale sites). This is comparable to data from past years.

Classification of 1996 DOH Cases

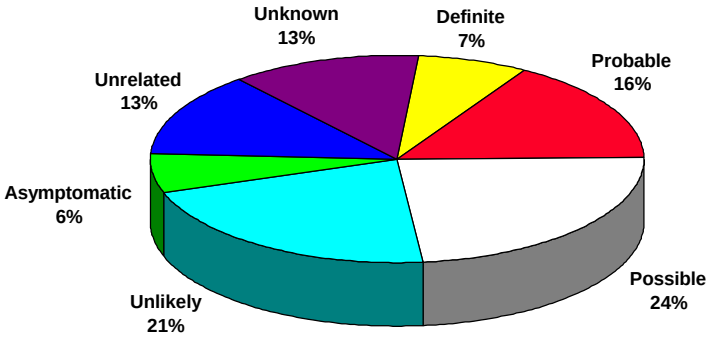

Figure 5. Chart does not include one case that was classified as indirect.

1992-1996 Reported Occupational/Non Occupational Illness and Injuries Classified as Definite, Probable, or Possible

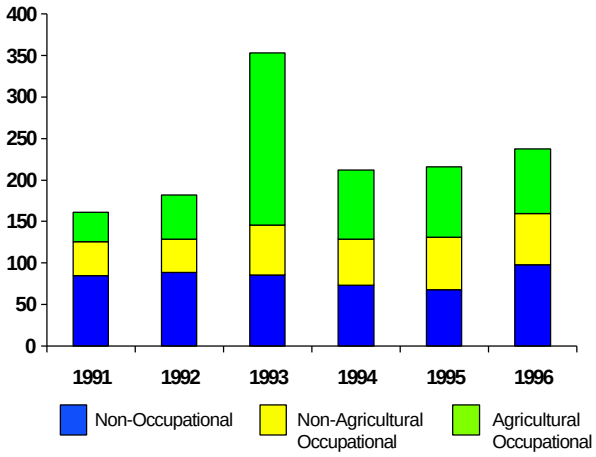

Figure 6

Table 11. 1996 DOH Cases by Type of Application
(definite, probable, possible)

Type of Application	# Cases	Percent
Agricultural applications	97	41%
Non agricultural applications: residential applications	66	29%
applications to commercial buildings, schools, offices, or their grounds	23	10%
other applications	17	7%
Exposure did not involve an application	32	14%
Total	237	100%

Nearly half (46%) of 1996 exposures resulted from direct contact with a pesticide while mixing or applying (Table 12). Twenty-two percent resulted from contact with either airborne or surface residues after an application was completed. Fifteen percent involved exposures to spray which drifted from the site of application. Again, the results are similar to what DOH has seen in past years.

Table 12. 1996 DOH Cases by Type of Exposure (definite, probable, possible)

Circumstances of Exposure	# Cases	Percent
Direct exposure while handling pesticide	109	46%
Exposure to residues	52	22%
Drift	36	15%
Accidents	18	8%
Ingestion	11	5%
Other/Unknown	11	5%
Total	237	100%

Number of Persons Involved

Three hundred seventy-one (92%) pesticide incidents investigated by DOH involved only one person. The three incidents involving the largest number of individuals were:

960174
Twenty-six apple thinners were drifted on when working near a field being treated with pesticide; symptoms included rash, headache, nausea, and dizziness. Twenty-three workers were interviewed. None sought medical care.

960079
Thirteen people from four different families reported symptoms after returning to their homes. Their homes had been treated by a PCO with a termiticide. Symptoms included dry throat, headache, nausea, eye and nose irritation.

960140
Ten department store employees developed symptoms after an herbicide spill in a merchandise truck. Symptoms included nausea, dizziness, and headache.

Location

Pesticide incidents were reported in all but five counties. The ten counties with the most reported incidents are shown in Table 13. Figure 7 shows the location of definite, probable, or possible cases over a 3-year period. A more complete analysis of pesticide incidents in any given county is available from the Pesticide and Surveillance Section on request.

Table 13. Top Ten Counties with Reported Incidents in 1996

County	Incidents	Individuals
Yakima	73	112
King	40	45
Grant	28	39
Benton	27	30
Snohomish	25	28
Chelan	24	30
Pierce	21	28
Okanogan	20	23
Spokane	18	19
Franklin	15	15

1994-1996 Location of Definite, Probable, and Possible Cases

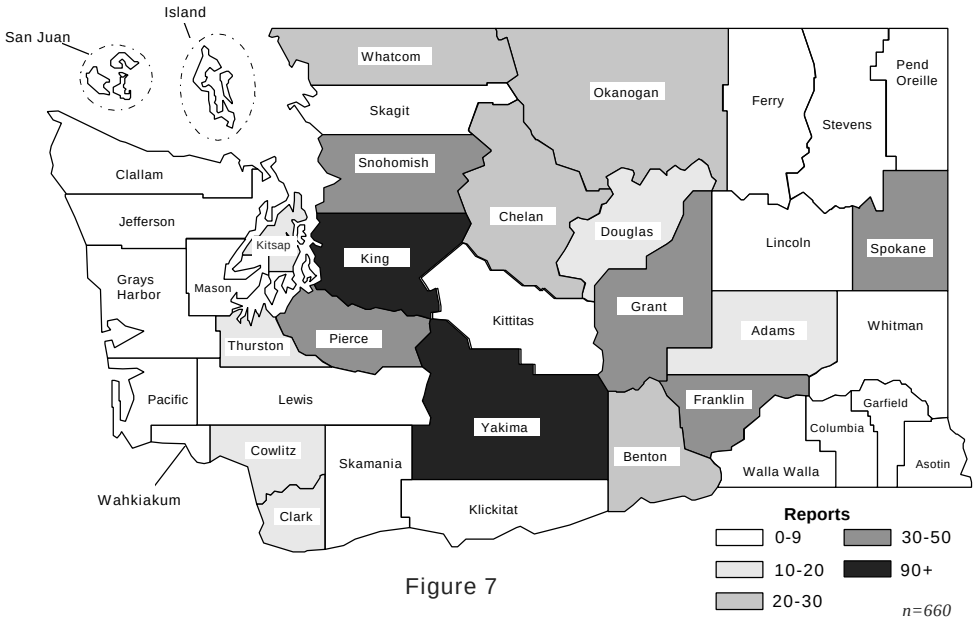

Figure 7

Severity of Medical Outcome

In 1995, DOH coded cases according to the severity of health outcome (see Appendix D for a description of severity codes). For the second year (1996), the majority (77%) of total cases investigated were considered to have mild or moderate medical outcomes. Twenty percent of the cases had no symptoms or were unrelated to pesticide exposure. Three percent of cases investigated had outcomes considered severe. Eight of these cases were not pesticide related. Of those cases considered mild or moderate, 314 (81%) sought medical care at a doctor's office, emergency room, or walk-in clinic.

Severity of Definite, Probable, Possible Cases 1995-1996

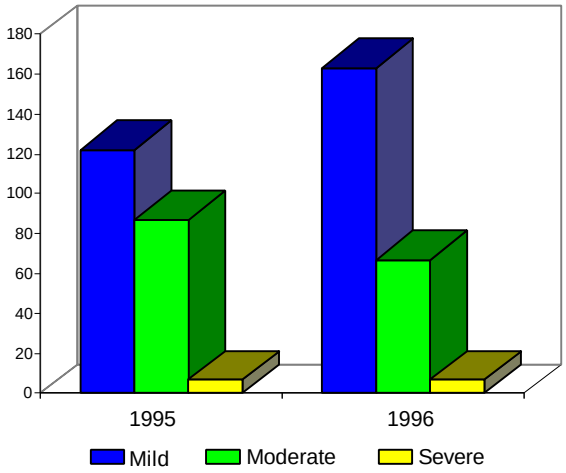

Figure 8. Severity of medical outcome for 216 cases in 1995 and 237 cases in 1996.

Seven cases classified as definite, probable, or possible (Figure 8) were considered to have severe health outcomes. Three resulted from intentional pesticide ingestion and the remaining four cases are described on the following page.

960008 (definite)

A nine month old baby with history of asthma developed petroleum pneumonitis when her 2-year-old brother discharged an aerosol insecticide into her face. The baby was hospitalized for six days of treatment and pulmonary monitoring.

960105 (possible)
A 35-year-old male was hospitalized for three days with acute bronchospasm and hypoxemia after use of multiple bug bombs in his home. The patient's symptoms may also have been from his exposure to "strong fumes" generated when he mixed cleaning agents, including ammonia and chlorine bleach.

960159 (probable)
A 51-year-old worker at a Christmas tree farm developed serious, but reversible, eye injury when chlorothalonil fungicide dripped into his eye during application. He was followed for one month by an eye specialist.

960215 (possible)
A 39-year-old female developed severe topical reaction after using a mosquito repellent containing DEET. Nine days later, skin lesions were still healing. Reaction may have been an allergic reaction to fragrance in the product, or a rare reaction to DEET itself.

Section Two: Occupational Cases of Pesticide Related Illness

Sixty percent (303) of cases investigated by DOH involved an alleged pesticide exposure on-the-job. Of these, 139 cases were classified as definite, probable or possible. Seventy seven were agricultural workers and 62 were from other occupations (Figure 9).

1996 DOH Occupational and Non-Occupational Cases (Definite, Probable, Possible)

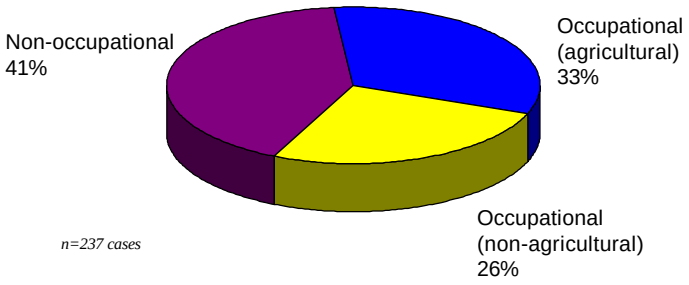

Figure 9

Table 14 shows the occupation of workers most frequently involved in DOH cases. For the fifth year, agricultural workers are the occupational group with the highest reported incidence of pesticide related illness. The annual number of definite, probable, or possible cases in this occupational class has remained steady at around 80 cases per year since 1994. Among agricultural workers, those who directly handled pesticides (e.g., mixers, loaders, applicators) were at highest risk for direct exposure, and accounted for 39 (51%) reported illnesses in 1996. This group usually accounted for 40 to 50 percent of agricultural occupational cases. The remaining 49 percent of occupational agricultural cases were thinners, irrigators, and other agricultural workers exposed either to drift or to residues on foliage and equipment.

Other occupational groups exposed while directly handling pesticides included: exterminators; lawn and garden care professionals; building and grounds maintenance workers (who are not professionally licensed to apply pesticides); and, other workers in miscellaneous occupations.

During 1996, there were four incidents that involved 15 employees at places where pesticides were sold. One incident involved workers at a receiving dock who unloaded a truck in which a pesticide container had leaked. Other incidents involved retail stockers or cashiers who were exposed to leaking containers or bags. DOH supports a joint pilot effort by WSDA and WSU to educate and train retail workers.

Table 14. Occupations of Reported Pesticide Cases in 1996

	Def., Prob., Poss. Cases	All Cases
Agricultural Workers		
Pesticide applicators/mixers/loaders	39	66
Thinners	21	64
Harvesters	1	31
Cleaning/fixing equipment	3	5
Irrigators	1	6
Other field worker	9	34
Nursery/greenhouse worker	3	6
Non Agricultural Workers		
Commercial pesticide applicators *(licensed for structural or landscape pest control)*	7	12
Property maintenance staff *(janitors, housekeepers, grounds maintenance)*	7	15
Employees at places of pesticide retail *(loading dock workers, stockers, cashiers)*	11	15
Employees repackaging pesticide for wholesaler*	8	8
Office workers	11	14
Miscellaneous indoor workers	16	23
Miscellaneous outdoor workers	2	4
Total	**139**	**303**

** Eight workers exposed while repackaging insecticide dust.*

Every year, a number of non-agricultural workers are exposed to workplaces that have been treated with pesticides. Office workers and restaurant/bar employees report this type of exposure most frequently. These incidents could be reduced by applying pesticides when employees are absent, and by more thoroughly ventilating treated areas before workers return.

Table 15 identifies how individuals were exposed to pesticides on-the-job. Approximately half of DOH occupational cases resulted from directly handling a pesticide product. Agricultural worker exposure to pesticide drift (27% of cases) and to foliar or soil residues (14% of cases) continued to create problems. For other occupational cases, exposures to residues in buildings and landscapes accounted for 27 percent of the cases.

Table 15. 1996 Circumstances of Occupational Pesticide Exposure (definite, probable, possible)

Nature of Exposure	Agricultural	Non agricultural
Exposed while handling pesticide product:		
applying with vehicle mounted equipment	29	4
applying with handheld equipment	4	14
applying other	1	1
mixing/loading for any application	5	2
formulation plant workers	–	8
Exposure to surface residues or residual volatiles in:		
agricultural field or greenhouse	11	–
yards, landscapes	–	4
building, other structures	1	13
Exposed while cleaning/fixing equipment	3	3
Exposed to pesticide drift	21	3
Accidents (spills, etc.)	2	9
Other/unknown	–	1
Total	**77**	**62**

Section Three: Incidents Involving Agriculture

Whether discussing incidents or individual cases, the percentage of agricultural pesticide exposures represents 52 percent of the total number of reports. Out of 402 incidents investigated, 207 occurred in an agricultural setting involving 262 individuals. Not all individuals in this group worked in agriculture; however, exposure resulted from a pesticide application to an agricultural crop. Ninety-seven (37%) agricultural injuries/illnesses were classified as definitely, probably, or possibly related to pesticides (Figure 10).

1996 Classification of All Agricultural Cases

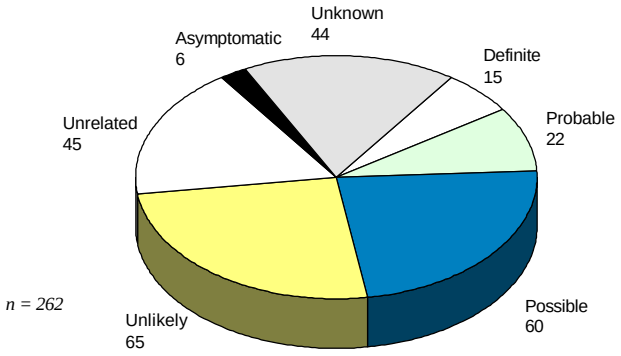

Figure 10

Occupational Cases Resulting from an Agricultural Application

Seventy-seven of the 97 cases were exposures on-the-job. Agriculturally related pesticide exposure has occurred in practically every Washington State county. However, three-fourths of all agriculture related exposures occurred in eastern Washington. Table 16 displays distribution of cases by agricultural product.

Table 16. 1996 Occupational Cases by Type of Agricultural Product (definite, probable, possible)

Agricultural Product	Total	
Fruit	51	(66%)
Field crops	15	(20%)
Nursery/greenhouse	4	(5%)
Vegetable	3	(4%)
Berries	1	(1%)
Christmas trees	2	(3%)
Other	1	(1%)
Total	77	

"Forty-six (60%) of the cases were considered mild."

"Thirty cases (39%) were considered moderate..."

Sixty-one (80%) of the 77 occupational agricultural cases received medical care from private physicians, emergency rooms, or walk-in clinics. Forty-six (60%) of the cases were considered mild (Table 17). Symptoms included headache, nausea, vomiting, rash, and eye irritation which resolved with decontamination and minor treatment of symptoms. Thirty (39%) were considered moderate requiring slightly more medical intervention. One case was rated as severe (see case 960159, page 17). None of the 1996 agricultural cases resulted in hospitalizations.

The largest portion (66%) of agricultural occupational definite, probable, or possible cases occurred in the tree fruit industry, primarily apples. Twenty percent of cases involved field crops. The remaining cases (14%) came from categories such as nurseries/greenhouses, berries, vegetables, and Christmas trees.

Table 17. 1996 Severity vs. Type of Exposure for Occupational Agricultural Cases by Type of Agricultural Production

Circumstances of (definite, probable, or possible)	Severity of Exposure							Total
	Mild	Moderat	Mild	Moderate	Mild	Moderat	Sever	
	Field Crops*		Fruit		Other			
Drift	1	1	10	9	–	–	–	**21**
Ground application	4	1	12	10	2	–	–	**29**
Field residue	1	–	5	2	1	2	–	**11**
Mixing/loading	3	–	1	–	1	–	–	**5**
Hand application	–	1	–	1	–	1	1	**4**
Clean/fix	–	–	1	–	2	–	–	**3**
Accident	1	1	–	–	–	–	–	**2**
Application other	–	1	–	–	1	–	–	**2**
Total	**10**	**5**	**29**	**22**	**7**	**3**	**1**	**77**

** No cases were rated as severe in this category.*

Application of pesticides, either with vehicle mounted or handheld equipment, accounted for 44 percent of pesticide related illnesses. Twenty-seven percent of the 77 agricultural workers were exposed to pesticide drift; 14 percent were exposed to residues.

Table 18. 1996 Job Activity and Exposure Relationship Associated with Agricultural Production Types

Type of Agricultural Production							
	Relationship to Exposure						
	Def/Prob	Pos	Def/Prob	Pos	Def/Prob	Pos	
Job Activity	**Field Crops**		**Fruit Production**		**Other****		**Total**
Applicator	4	3	14	9	5	–	**35**
Farm work/general	1	4	2	6	3	2	**18**
Thinning	–	–	2	17	–	–	**19**
Mixer/loader	2	1	1	–	1	–	**5**
Total	**7**	**8**	**19**	**32**	**9**	**2**	**77**
*** Includes berries, forest, nursery/greenhouse, livestock, etc.*							

Exposure to Field Residues

One hundred reports of illness (38%) were from exposure to field residues (Table 19). Twelve of these cases were classified as definite, probable, or possible. Sixty-two field residue cases classified as unlikely (37) or unknown (25) are of concern because of the inability to properly characterize exposure. The remaining 26 cases were determined to be unrelated. Factors that contributed were lack of relevant data such as confirmation of pesticide application and uncertain location at time of exposure. The migratory nature of many workers make it difficult to follow-up cases.

Table 19. Exposure Activity of 1996 DOH Agricultural (Ag) Cases (definite, probable, possible)

Exposure Activity	All Ag Cases	Ag Cases Def/Prob/Pos
Residue field	100	12
Ground application	61	29
Drift	57	30
Hand application	13	4
Accident	5	4
Clean/fix	5	3
Ground mixing/aerial	3	3
Aerial mixing/loading	1	1
Air application	1	–
Emergency response	1	–
Other application	1	1
Other mixing/loading	1	1
Pack/processing	1	–
Residue other	1	–
Residue structure	1	1
Other	7	–
Unknown	3	–
Total	262	97

Non Occupational Agricultural Cases

There were 20 definite, probable, or possible agricultural cases that were not job related. Nineteen of those were mild in severity and one was moderate. Individuals were exposed as the result of applications to fruit trees, berries, wheat, and roadside spraying. Two cases were classified as definite, one as probable, and 17 as possible.

Pesticide Products in Agricultural Incidents

DOH defines a causal product as a chemical formulation which includes the pesticide and often a number of inerts (carriers, adjuvants, synergists, etc.). The entire formulated product is considered in the investigation.

Forty-eight agricultural cases involved one causal product. The remainder were cases involving tank mixes of two or more compounds. While reviewing data for the number of different causal products, 60 different products were found. A few products were involved with slightly more frequency such as 2,4-D (8 cases), glyphosate (9 cases), and azinphos-methyl (25 cases).

Few, if any, conclusions can be made except perhaps the number of pesticide illnesses reported are related to the volume of pesticide used and the labor intensity of the crop.

Section Four: Urban/Suburban Cases of Pesticide Related Illness

Of the 504 cases investigated in 1996, 242 were associated with non-agricultural pesticide use. DOH considered 140 (58%) of these to be definitely, probably, or possibly related to pesticide exposure (Table 20). Seventy-five percent (105) were exposures associated with an actual application of pesticide. The bulk of these applications (90) occurred at residential or commercial sites (i.e., homes, apartments, office buildings, restaurants). Thirty-eight percent of the 90 cases involved an application by a professional PCO or lawn care service. The remaining 62 percent were associated with pesticides applied by a homeowner, co-worker, or other unlicensed person.

Table 20. 1996 DOH Cases Involving All Non Agricultural Pesticide Use (definite, probable, possible)

Source of Exposure	Cases
Applications to:	
Residential building or grounds (home apartment)	67
Commercial building or grounds (offices, restaurants, hotels)	23
Public park	1
Roadside	2
Veterinary clinic	2
Irrigation ditch	3
Other	7
Exposures to stored or spilled pesticide:	
Pesticide retail (cashiers, stockers, receiving dock, customers)	11
Repackaging pesticide for wholesale	8
Home exposures:	
Ingestion accidental	6
Ingestion intention	5
Other	5
Total for all non-agricultural pesticide use	**140**

There were a number of non-agricultural cases that involved an exposure to a spilled or improperly stored pesticide (Table 20). About half were exposures that occurred on-the-job during wholesale or retail sales of pesticides. These cases were discussed in DOH Section Two: Occupational Cases. The majority of remaining cases occurred in the home environment. Eleven cases involved pesticides that were spilled or stored within easy reach of children.

Table 21 shows the pest targeted by applications at 90 residential or commercial sites. Forty-eight percent of these cases involved structural pests, 30 percent involved landscape or garden use of pesticides, and 13 percent involved applications directly to human skin or hair. DOH data suggests a need for additional education about safe control of landscape pests, weeds, and structural pests such as termites, fleas, and cockroaches.

Table 21. Target Pest for 1996 Cases [1] Associated with Pesticide Applications at Residential and Commercial Sites

Subject of Application	# DOH Cases Associated with Use
Landscape/garden use:	
Weeds	16
Insects	13
Moles	1
Use in/around structures:	
Termites	14[2]
Fleas	9
Cockroaches	7
Ants	6
Spiders	2
Insect unspecified or other	5
Applications to people:	
Lice creams/shampoos	8
Mosquito repellents	4
Other	2
Total	**90**

[1] *Definite, probable, and possible cases.*
[2] *Eleven cases were from a single application.*

Table 22 shows the type of pesticide and the severity of medical outcome for 1996 DOH cases which occurred following pesticide exposure in urban and rural commercial settings. Both pesticide storage and application problems are included in this table. As in the past two years, insecticide exposure was involved in the majority (77%) of DOH cases in this category and included 89 percent of moderate to severe cases. The most common insecticides involved were organophosphates and carbamates (e.g., chlorpyrifos, diazinon, phorate, propoxur). Pyrethrins and synthetic pyrethroids (e.g., cyfluthrin, esfenvalerate, permethrin) were also involved in a number a cases, most of which were skin irritation or eye injury. DOH data suggests a need for improved education regarding safe pesticide use.

Table 22. 1996 Cases [1] Associated with Pesticide Use [2] Around Residential and Commercial Buildings and Their Grounds

	Severity of Medical Outcome			
Type of Pesticide Involved	**Mild**	**Moderate**	**Severe**	**Total**
Insecticides				
organophosphate/carbamate	8	10	–	**18**
combinations of insecticides				
(all include a cholinesterase inhibitor)	16	4	–	**20**
pyrethrins/pyrethroids	19	10	2	**31**
other	3	2	1	**6**
Herbicides	16	2	–	**18**
Fungicide and insecticide combinations	2	1	–	**3**
Other	2	–	–	**2**
Total	**66**	**29**	**3**	**98**

[1] *Definite, probable, or possible cases*
[2] *Includes cases associated with applications, improper storage, and spills*

Section Five: Incidents Involving Children

Sixty-nine individuals (32 females and 37 males) 18 years of age and less accounted for 14 percent of the 504 reported cases. This is considerably less than the 92 reported in 1992, 165 in 1993, and 230 in 1994, but compares with the 53 reported in 1995. The dramatic decrease in 1995 reflects DOH and WPC policy not to investigate childhood asymptomatic rodenticide poisonings. Thirty-eight of the 69 childhood cases occurred in the home.

Table 23. 1996 Relationship to Exposure for Children <19 Years of Age

Classification	Incidents	
Definite	7	(10%)
Probable	13	(19%)
Possible	8	(12%)
Unlikely	17	(25%)
Unknown	4	(6%)
Unrelated	7	(10%)
Asymptomatic	13	(19%)
Total	69	

Definite, Probable, or Possible Cases

Twenty-eight of the 69 cases were determined to be definitely, probably, or possibly related to pesticides. Twelve children were under the age of six, nine were ages 6-10, and seven were ages 11-18; 14 were male and 14 female. The severity of the 28 cases were 21 (75%) mild, five (18%) moderate, and two (7%) severe.

Table 24 lists the type of pesticide involved with individuals less than 19 years of age. Twenty-three cases were non-agricultural and 18 exposures took place in the home.

Five cases were related to agricultural applications. One occupational exposure case involved an 18-year-old applicator. Another 18-year-old was drifted on while driving an automobile. Three smaller children ages four, seven, and eight were drifted on during a berry insecticide application.

Table 24. 1996 Pesticide Involved in Childhood Cases

Pesticide	Incidents
Insecticide/Acaricide	69
Fungicide	16
Herbicide	5
Repellent	6
Other	4
Molluscicide	2
Total	**102**

Note: *In some cases, a child was exposed to more than one type of pesticide.*

Labor and Industries (L&I)

The Department of Labor and Industries (L&I) responds to pesticide related worker exposure through two divisions: the Washington Industrial Safety and Health Act (WISHA) Services Division, and the Insurance Services Division, Claims Administration Program. In 1996, L&I WISHA Services Division conducted 39 pesticide related investigations with 30 resulting in violation. The Insurance Services Division, Claims Administration Program received 222 pesticide related claims.

WISHA Services Division

Safety and Health Program

WISHA Services Division staff address safety and health issues in the workplace. WISHA enforcement staff perform investigations of alleged violations of state laws designed to protect against injuries and illnesses. WISHA enforcement staff may issue citations that require employers to implement changes in the workplace, assign penalties to serious violations, and perform follow-up inspections to assure compliance. WISHA consultation staff offer free, confidential, on-site consultations, at the employer's request, to determine compliance with state safety and health laws.

In 1996, WISHA enforcement staff performed 39 pesticide related investigations; 24 in western Washington and 15 in eastern Washington. These investigations occurred in both agricultural and non-agricultural environments. Nine investigations were the result of referrals from within the agency, or from other state agencies such as WSDA or DOH. Nineteen were employee or employee representative initiated complaints; nine were planned inspections identified through the L&I targeting list; one was both a referral and a complaint; and, one was a fatal/non-fatal inspection.

" Pesticide use is wide spread in today's agricultural production and agriculture is one of our state's major industries. The PIRT Panel's efforts to track pesticide incidents and encourage collaborative approaches between agencies who investigate alleged pesticide poisonings are an important part of continuing efforts to reduce workplace injuries and illness." Michael Silverstein, Assistant Director, WISHA Services Division

Reasons given for 20 complaints by employee or employee representatives were: symptoms resulting from pesticide exposure; improper hazard communication programs; violations with PPE, decontamination, labeling, posting, or storage errors. Violations were identified in 15 complaints resulting in citations being issued against the employer [1].

The targeting list was designed to trigger inspection of high risk work sites based on the number of employees and claims filed. Eight of the nine planned inspections resulted in one or more citations.

[1] A violation is an unlawful act. A citation is written notice of the violation.

Violations were reported in 30 of the 39 investigations. The following violations were most frequently cited: inadequate hazard communication program; inadequate respirator program or fit testing; inadequate eyewash facility; inadequate safety training program; inadequate PPE provision, use, or assessment; no accident prevention program; no material safety data sheets; lack of hazardous chemical labeling; no first aid training, kits, or cards; and, inadequate record keeping. More than one citation can result from a violation[2]. Of the 30 investigations which were not planned inspections eight were investigated by both L&I and DOH, five by L&I and WSDA, and four by L&I, DOH, and WSDA. L&I Case 115346322 investigation summary illustrates some common violations often found associated with occupational pesticide use.

L&I Case 115346322:

L&I investigated a complaint of inappropriate pesticide application at a technical college. The inspection revealed that an unlicensed applicator employee had been spraying weeds when the mist got on his hands and arms. He had been wearing street clothes and rubber gloves. He was not wearing protective eyewear The employee was not supervised by a licensed applicator, and had previously failed a licensing exam. L&I cited the facility for lack of washing facilities, inadequate personal protective equipment, and inadequate training, labeling, and Material Safety Data Sheet provisions. The fine of $875 was appealed and reduced to $560. WSDA and DOH also investigated this incident.

L&I Claims

Insurance Services Division, Claims Administration Program

The Insurance Services Division, Claims Administration Program, processes worker claims initiated by on-the-job injuries and illnesses. Claims are not routinely investigated by the regional compliance, safety and health (WISHA) staff unless reported by the employee as a complaint about hazardous conditions at the workplace, or the claims manager requests additional information. L&I, Insurance Services Division, Claims Administration Program refers pesticide claims to DOH for investigation. In 1996, 222 claims were referred to DOH for review for health reasons.

In 1996, 165 (74%) claimants (Table 25) were exposed while working in agriculture and 57 (26%) in non agriculture. DOH classified the 222 claims as definite (17), probable (41), possible (33), unlikely (59), unrelated (39), asymptomatic (1), and unknown (32). DOH determination correlates the likelihood that reported symptoms are causally related to pesticide exposure. The determination does not have a bearing on the claim status. For the 91 claims classified as definite, probable or possible, DOH assigned the following severity rating of mild (02) to 65 claims, moderate (03) to 25 claims, and severe (04) to one claim**.** (Refer to severity table Appendix D).

Fifty-two percent (116) of the claims involved workers in the fruit industry. Of the 116 claims from the fruit industry, DOH classified 29 as definite, probable or possible. Field

[2] A violation is an unlawful act. A citation is written notice of the violation.

crops follow with nine percent (20) of claims, 14 of which were classified as definite, probable, or possible.

DOH classified 29 of the claims in the fruit industry as definite, probable, or possible. When evaluated together, many involved lack of, or inadequate, PPE. The following case is an example:

DOH Case 960150: A 25-year-old agricultural worker received ocular exposure while washing a sprayer with a pressure washer. Liquid splashed in his eyes and he immediately developed irritation, blurred vision, redness, and pain. Symptoms resolved with treatment. DOH classified the case as definite, with a severity rating of mild. The incident could have been prevented by the worker wearing protective eyewear.

During 1996, 111 (50%) claims were rejected. Medical benefits were paid for 97 (44%) claims, eight (4%) were paid for time loss, two (1%) are pending, one was kept on salary, and three were unknown. Table 26 compares percentages paid for benefits from 1992 to 1996. The following definitions apply:

Table 25. 1996 L&I Pesticide Related Claimants by Business Type [*]

Agricultural		
Fruit	116	(52%)
Field crops	20	(9%)
Vegetables	11	(5%)
Nursery/greenhouse	8	(4%)
Berries	4	(2%)
Christmas trees	4	(2%)
Other/Unknown	2	(1%)
	165	
Non Agricultural		
Re-packaging for wholesale	8	(4%)
Apartment, hotel, property management services	7	(3%)
Landscaping, lawn, garden service	6	(3%)
Structural pest control service	4	(2%)
Restaurant/bar	4	(2%)
Wholesale/retail of pesticides	4	(2%)
Other[**]	21	(9%)
	54	
Total[***]	**222**	**(100%)**

[*] *Includes all claims referred to DOH that alleged pesticide exposure. Not all were considered to be related to pesticides.*
[**] *Includes 6 office workers, 12 other indoor workers, and 4 outdoor workers. Six of the 22 were using pesticides at the time of exposure; the rest were allegedly exposed to drift.*
[***] *Three additional claims were submitted to DOH that did not involve pesticide exposure. (A fertilizer dealer sprayed carburetor fluid in his face; a packing house worker got apple wax in his eyes; and a lawn care technician got fertilizer in his eye.)*

- **Medical Only/Non-Compensable Claim:** A worker experienced symptoms that he/she believed occurred from exposure on-the-job and sought medical evaluation. The physician found the symptoms were related to the exposure and there was objective evidence of injury. Therefore, the claim was allowed and medical evaluation and any follow-up medical care/treatment was paid. The employee did not miss more than three days of work. These lost work days are not reimbursed to the employee.

- **Time Loss/Compensable Claim:** A worker had an allowable claim and missed more than three days of work immediately following an exposure on the job. The worker is paid a portion of salary while unable to work. All related medical costs are covered.

- **Rejected Claims:** Initial diagnostic evaluation medical costs are covered but the claim is rejected because objective evidence is lacking to relate the symptoms to the workplace exposure. Many claims are rejected because the symptoms have resolved by the time treatment is obtained; there is no objective evidence of injury; or, exposure cannot be confirmed or documented. A rejected status prevents the worker from reopening a claim based on original symptoms.

- **Pending:** Additional information is being collected on the claim before a determination can be made.

- **Kept On Salary:** The employer elects to pay the claimant's salary instead of L&I paying time loss payments while the employee is recovering from an injury or illness. This protects the employers industrial insurance rates from rising.

Table 26. Benefits Paid for Claims Related to Pesticides

Claim Type	1992		1993		1994		1995		1996	
Medical only/non-compensable	179	(78%)	223	(77%)	138	(63%)	134	(55%)	97	(44%)
Time loss/compensable	25	(11%)	41	(14%)	12	(5%)	9	(4%)	8	(4%)
Rejected	23	(10%)	16	(6%)	66	(30%)	98	(40%)	111	(50%)
Pending	2	(1%)	10	(3%)	4	(2%)	3	(1%)	2	(1%)
Kept on salary		—		—		—	1	—	1	—
Unknown		—		—		—		—	3	(1%)
Total	**229**		**290**		**220***		**245**		**222**	
** In 1993, benefit information was only available on 220 of the 241 claims.*										

As of January 7, 1998, the total projected dollar amount paid for all industries on 1996 claims (medical and time loss) was $588,001,239. Agricultural claims amounted to $32,950,315, and pesticide related claims totaled $45,936. These amounts will change based on the final outcome of each claim[3].

L&I Observations

The percent of pesticide claims with rejected status have risen from six percent in 1993 to 50 percent in 1996. Claims are rejected because of a lack of objective medical findings by the physician. The medical costs of initial diagnostic evaluation are paid for rejected claims, but the claimant cannot obtain time loss benefits or reopen the claim in the future. During 1996, L&I was unable to identify reasons for the increase in the rejected status of claims alleging symptoms resulting from pesticide exposure. To further evaluate this issue, staff from L&I's Policy and Technical Services and the Chemical Related Illness Unit will collaborate on analyses of claims allowance.

[3] Figures supplied by L&I focus claims data base.

Washington Poison Center

In 1996, the Washington Poison Center (WPC) received 132,649 calls. Of these, 3,092 were pesticide related and account for two percent of total calls received statewide by WPC (Table 27).

Table 27. WPC Comparison with Prior Years

Pesticide	1990	1991	1992	1993	1994	1995	1996
Fungicide	86	141	124	117	96	104	120
Herbicide	650	608	637	573	512	531	441
Insecticide	3,633	3,090	3,460	3,158	2,040	2,173	1,992
Moth Repellent	180	187	158	120	68	89	66
Rodenticide	682	655	664	676	473	478	473
Total	**5,231**	**4,681**	**5,043**	**4,644**	**3,189**	**3,375**	**3,092**
% of Total Calls to WPC	**4.1%**	**3.7%**	**3.9%**	**3.09%**	**2%**	**2%**	**2%**

WPC calls involving pesticides are referred to DOH if the individual is referred to a health care provider, or if a health care provider required case management assistance. One hundred ninety-five referrals from WPC were investigated by DOH because of clinical signs and symptoms of pesticide exposure. WPC reported one death (a suicide) related to ingestion of pesticide in combination with other substances.

DOH classified these cases as: 27 definite, 51 probable, 38 possible, 35 unlikely, 13 unrelated, 12 unknown, and 19 asymptomatic. As in previous years, the majority (93%) of pesticide related calls to WPC involved accidental exposure. Insecticides (Figure 11) continued to be the type of pesticide most frequently involved in calls to WPC (64%).

Type of Pesticide Call to WPC

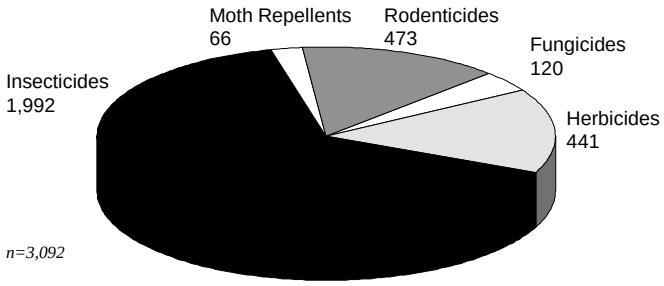

Figure 11

Forty-one percent of calls involved children less than six years of age. Table 28 illustrates WPC calls by pesticide type for the different age groups.

Table 28. 1996 WPC Calls by Pesticide Type and Age

Pesticide Type	Less than 6 years old	6-19 years old	>19 years old	Total Human Exposure Calls
Fungicides	14	11	95	**120**
Herbicides	118	49	274	**441**
Insecticides	701	340	951	**1,992**
Moth Repellents	32	6	28	**66**
Rodenticides	393	16	64	**473**
Total	**1,258**	**422**	**1,412**	**3,092**

WPC Referral and DOH Case 960353:
A 74-year-old woman had been caring for her grandchildren who had head lice. Because her head itched, she washed her hair with head lice shampoo and splashed some in her eye. DOH classified the case as definite with a severity rating of moderate.

Overall, the number of pesticide related calls to WPC continue to decrease (Figure 12). All pesticide calls decreased at approximately the same rate, with the exception of calls that involved fungicides (Figures 13 and 14). While the number of calls are not large (120 of 3,092), they did not decrease at the same rate as other types of pesticide calls. Perhaps this indicates a need for both additional research and educational efforts regarding fungicides.

"Based on the steady decline of human concerns about pesticides over the last eight years, the state agencies represented on the PIRT Panel have done an effective job in reducing citizen concerns about pesticides. Let's hope the number of pesticide calls continue to fall even further."
Dr. Robertson, Director, WPC

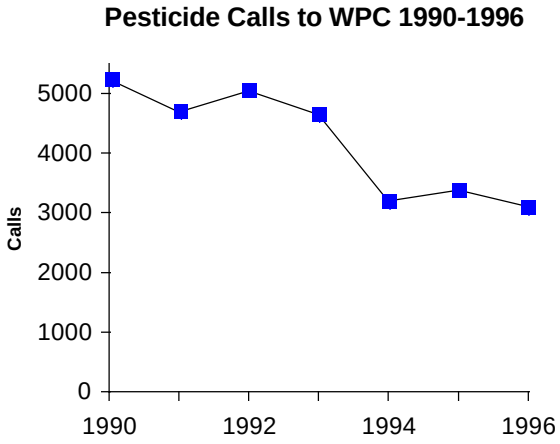

Figure 12

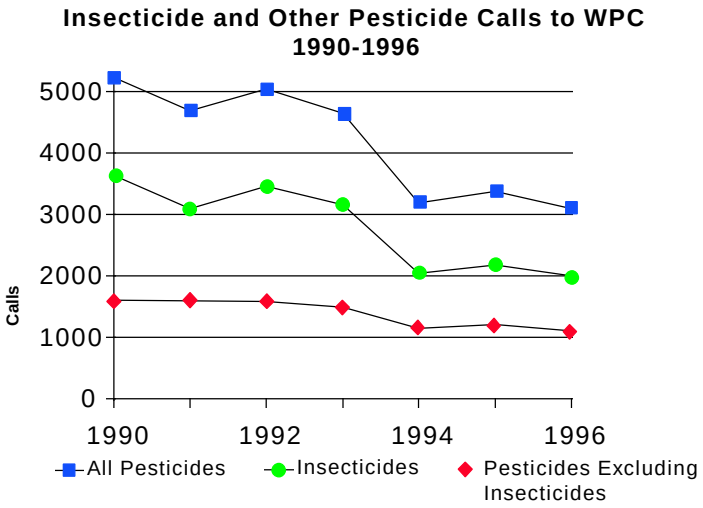

Figure 13

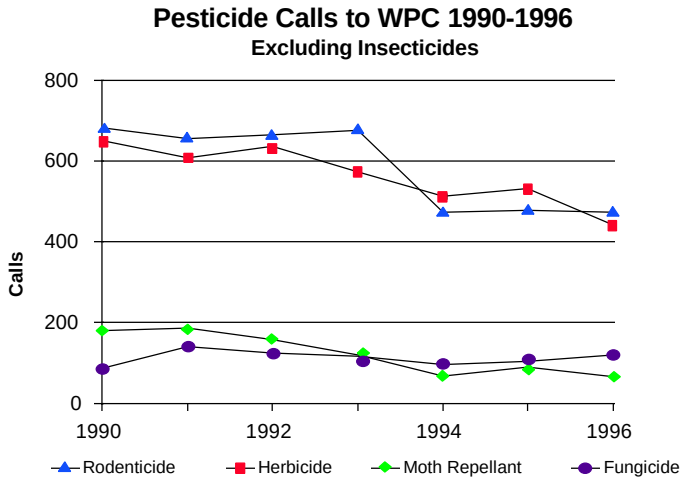

Figure 14

WPC Referral and DOH Case 960335:
A husband and wife became ill with flu-like symptoms from eating new potatoes side dressed with a systemic pesticide after planting. The pre-harvest interval had not been observed. No environmental or biological samples were obtained. DOH classified the case as probable, with a severity rating of moderate.

Recommendations for 1998 Activities

PIRT has selected two sets of recommendations. The first set of recommendations is directed toward PIRT itself and will be reflected in its 1998 agendas. The second set is directed toward agencies represented at PIRT.

Recommendations for PIRT Activities

- Obtain environmental incident data from natural resource agencies for inclusion in the PIRT Annual Report.
- Review PIRT's statutory responsibilities to determine if activities and membership are reflective of current concerns and existing statutory mandates.
- Enhance coordination between PIRT and the Pacific Northwest Agricultural Safety and Health Center at the University of Washington.
- Complete the PIRT Annual Report so it is available during the legislative session.
- Identify additional stakeholders who would benefit from information contained in the PIRT Annual Report

Recommendations for Agencies

- WSDA provide additional training and education to Wood Destroying Organisms (WDO) inspectors.
- DOH target educational efforts for safe use of pesticides in urban/suburban settings.
- DOH continue to monitor and evaluate reported incidents occurring in greenhouses and nurseries.
- L&I identify reasons for the increase of rejected claims resulting from pesticide exposure.